G. R. S. 58]

Previous references.

File No. 2-14

191

(Education)

Serial Nos. 143

Later references.

Edn. 2-14-15

GENERAL AND REVENUE SECRETARIAT.

Serial Nos. 143

Part B for May 1915

SUBJECT.

Prayer of Mr. R. Sitarama Rao, B.Sc to place before the Dewan copies of a certificate and of an article by him on Manufacture of paper

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GPB—10,000—23-3-15

G.R.S. 11]

1914.

GENERAL AND REVENUE SECRETARIAT.

(Edn)

NOTES.

File No. 2

FILE HEADING.

Foreign Scholarship

From

Mr R. Sitarama Rao B. Sc. Bangalore city.

No. — Dated 10.4.15 Received 10.4.15

Diary No 2503 | Enclos. 2 Spare Copies. | Serial No. 143

BRIEF ABSTRACT OF LETTER.

Submits copies of a certificate and of an article by him on manufacture of paper and requests that they may be placed before the Dewan in connection with the grant of foreign Scholarship of Rs 250

NOTES AND ORDERS.

NOTES—First Sheet.

2503

G. R. S. 12]

General and Revenue Secretariat.

Edn File No. 2 of 1914

Serial No. 143

From Mr. R. Sitaramia Rao, B.Sc.,
V main road, Chamarajendrapeth
Bldre city. dt 10.4.15.

Submits copies of a certificate and of an article by him on manufacture of paper, ... requests that they may be placed before the Dewan in connection with the grant of the foreign schp. of this year.

Secy's orders:—

(1) 'Please have this placed in the file at once'. dd. C.S 10.4.15.

(2) The accompanying papers are in the Council section where the present petn. may also be sent.

C.S

(3) Please keep this in the file, after bringing it to the notice of the Sec^y. dd 13/4.
13.4.15.

(4) 19/4/15

(5) His candidate was given a foreign schp. to study paper manufacture in G.O. no. 4787-93 Edn. 2-14-15, dt 12.5.15.

These papers may be filed.

25.5.15

dd 26/5

NOTE—Contn. sheet.

GPB—15,000—23-3-15

Canada, and that Scandinavi which is also a sparsely populated country, is making and exporting no less than 200,000 tons of wood-pulp.

The weather-conditions of the Nilgiri Districts are not, in our opinion favourable ~~Bombay~~ for the establishment of factories for transforming the pulp into fine writing and printing papers. The banks of the Cauvery in the Mysore District are decidedly more favourable for the location of paper-making factories. Large buildings and skilled labour on a large scale are requisite for the successful working of the paper-making factory; and we believe skilled labour on a large scale is found in the Mysore District. Electric power is also available there, which reduces considerably the cost of working. The pulp, manufactured in the Nilgiri hills can be brought very easily to the Mysore District.

During the days of Haidar Ali in Mysore, paper, though of a rough sort, was made in many places, and most of the old Government records are found on hand-made paper. In these days of the 20th. century, when the general intelligence of the people is much higher than it ever was before, and when a great deal of attention is deservedly paid by our benign Government to the development of the economic resources of the country, we think the establishment of pulp and paper-making factories should become accomplished facts at a very early date.

Being at home, curiosity drew me to the Deccan Paper-Mill at Munirwa, which is only a few miles from that city. A study of the several processes of paper-manufacture there increased my interest, and I made up my mind to exhibit at the Bangalore Municipal [illegible] the various materials that are used in paper-making together with drawings and models of some of the machines. I had at first some di-

as to whether the public would visit my stall at all, but my four days' experience at the Exhibition has dispelled them all. All these four days my stall has literally been full of visitors , both Indian and European, eagerly listening to my explanations, and closely scanning the several models. Several ladies also visited the stall. It seems to me that if a company should be floated under Government Gaurantees, it is sure to prove a success.

Bangalore

Rsitaramaiah, Esq.

3rd May 1898.

MATERIALS.

The materials used in a paper mill, are numerous; they may be classified as follows:-

I. Rags.

II. Products of the Vegetables Kingdom taking the place of rags, entirely or in part; the most important are :-

Esparto, Acacia, Aloes, Jute, White Wood, Straws of Cereal and Leguminous Plants, Ferns &c.

III. Meterials required in Boiling :-

Unslaked Lime, Caustic Soda, Magnesium Bisulphate, Calcium Sulphate.

IV. Meterials required in Bleaching :-

Hydrochloric (Muriatic Acid), Sulphuric Ac id,, Manganese, Chloride of Lime, Common Salt, Antichlorine.

V. Materials required in Sizing:-

Resin, Carbonate of Soda, Starch, Alum, Gelatine, Sulphate of Zinc, Silicate of Soda, Casein.

VI. Mineral Substances:-

Kaolin, Sulphate of Lime, Sulphate of Barium, Chalk, Clays, Agalite (Magnesium Silicate).

VII. Colouring Materials :-

Various Dye Stuffs.

Kelir letter
Hon recd
25/2/15

MAHARAJA'S COLLEGE,

Mysore, 26/10/1915

Dear Mr Narayaniah,

A year or two ago I very strongly recommended Mr K Krishna Rao, B.A., L.T., now Special Officer in the Education Office, for a Scholarship which would enable him to go abroad & study Educational questions of the day. Nothing was done then, but you kindly remarked that I might renew my recommendations

at a later opportunity. Such
an opportunity now occurs,
& I write to say that my
confidence in Mr K Krishna
Rao remains unabated - my
is increased by reason of the
special appointment which
Government has been pleased
to confer on him in connection
with the introduction of
Compulsory Education into the
Mysore Province. Government
by this time have seen also
Rao & Mr Krishna
Rao is an ordinary person
by reason of his untiring
energy, enthusiasm, insight
intelligence. I really believe
it would be difficult to
find another candidate for

a State Foreign Scholarship
so well-equipped as is Mr.
Krishna Rao. Or one so likely
to make so adequate and
creditable a return to the
State. There are many questions
of first-rate importance
which Mr. K. Krishna Rao could
study in foreign countries to
his and the State's great advantage
That he is a strict Brahmin
yet willing & anxious to
go abroad, is an earnest of
his enthusiasm & a fact
which redounds to his credit.

As a well-wisher
of the State I shall be glad
if his application is successful.

Yours sincerely

Alex Duncan

[redacted] CITY MUNICIPAL EXHIBITION, 1915.

[redacted] Industrial and Domestic Science Section.

President:

Raja Sabha [redacted] Dewan Bahadur
K.P.Puttanna Chetty, Esq.

Vice-President:

B.Umrao Khan Sahib, Esq.

Joint Secretaries.

B.Basavaradhya, Esq., B.A.,B.L.; D.B.Ramachandra Mudaliar, Esq.

Certificate given to Mr. R.Sitarama Rao, B.Sc.

of Bangalore.

I do hereby certify that the Committee of the Bangalore City Municipal Industrial Exhibition, 1915, has awarded a

Silver Medal

to the above-named for excellence in-----

Demonstration of Paper Manufacture.

Bangalore,
7th..April, 1915.

Sd./ K.P.Puttanna Chetty.
President.

[redacted]

The Facilities for Paper Manufacture in Mysore.

India is said to consume annually about 4 and of this quantity less than one half is made by Mills, the rest being imported chiefly from Europe. it should be noted, use mostly the European Paper-Pu making their own. Now that the great European War has - turbed and ...gisrate i the trade, high time it is that we thoughts to make our own Paper-Pulp and supply fully our

India being continental in size, a large number Mills should be established and worked at convenient pla the growing demand for the article at the lowest possibl It is our intention here to bring to light the great fac that exist in the Mysore Province for the establishment of Mills.

The manufacture of fine paper is a very complicat business, and the several processes vary much in detail ac to the nature of the materials employed, and the class of tended to be produced. They are all, however, based upon t principles, and they may be conveniently be divided into the fo -ing three main Groups:--

I. The complete separation of the fibrous parts of the el -ed Raw Materials from the Cellular portions;

II. The reduction of fibre to the condition of a fine Pul

III. The transformation of the Pulp into the required pap

Any vegetable material that yields good fibre is cap

of being used for paper-making, but there is one important consi-
-ation which excludes altogether many substances from the list, Fo
paper to be liberally used, it is absolutely necessary that its pr
should be as low as possible; and fibrous materials, such as cotton
and other materials out of which more precious things can be made,
are atonce put out as being far too costly for paper. Instead of
cotton, tailor's cuttings, rags , weaving waste &c., which have
little or no value, are used in the manufacture of paper. Similar
considerations exclude ropes and timber. There are several Forest
products, such as bamboo, Bhabar Grass, Stalk of the Cotton Plant
&c., which can be used as raw materials. In the case of these ma-
terials the first processes is a Mechanical one, which consists in
sorting the materials and in cutting it up into small bits for the
subsequent operations. The separation of the fibrous parts from the
Cellular portions is a tedious process which may be done either
mechanically or chemically. The mechanical processes can yield only
inferior wrapping paper, and so the Chemical Processes is necessary
in most cases for the production of fine writing and printing papers
It consists--

(a) in boiling with chemicals the selected materials for remov-
ing from it all cell substances,

(b) in washing and breaking it for the removal of all traces of
the Lye with which it has been previously boiled,

(c) in bleaching it.

The preparation of fine Pulp for writing and printing Papers
includes (1) beating, and (2) the addition of resin, Soda, Starch
&c., for filling up interstices of fibres and making the paper strong

and opaque.

The pulp, after it is made fine and mixed with the required substances, is diluted with water, and from the resulting milky liquid, paper is made with the help of a machine, which consists essentially of an endless wire-cloth mould on to which the prepared Pulp flows, and on which a continuous sheet of paper is formed. This continuous sheet then passes through a series of rollers to expel the water, and over a number of heated cylinders to be dried, and is wound up at the end of the machine as dried and smoothened paper.. This roll of paper is then taken into the finishing house which is fitted with Calendering Machines, which may be either be with Calenders for glazing continuous rolls or Plate Calenders for glazing single sheets , the latter being the type used for highly finished paper. The paper is then cut into sheets of different sizes, and sorted by hand, all damaged ones being removed. The papers are then properly packed, and are ready for market.

For the consideration of the facilities that are found in the Mysore Province for the manufacture of paper we may view the several processes from a different standpoint, and divide them broadly into two large groups- the preparation of the pulp and the making of the paper. This division simplifies our problem considerably , especially as the preparation of the pulp may be carried on as an industry by itself.

For the successful working of a paper- mill, the selection of a suitable site is very necessary. The principal points to be attended to in this connection are;-

I. The abundance of the raw material and its easy transport

(Note that one ton of pulp requires more than two- and-a -half

tons of raw material).

II. The quality and quantity of the water-supply as well as the facility with which the waste water can be disposed of. (Note that the making of one ton of pulp requires about 50,000 gallons of water-).

III. The ease with which workmen can be obtained.

IV. Facilities of communication with markets for chemicals&c.

V. Facilities for the easy transport of the finished product.

The preparation of the pulp is more tedious and difficult than the transformation of the pulp into paper, and we shall do well to bear this in mind. The conditions required for the successful working of pulp-factories are somewhat different from those required for the transformation of pulp into paper; and considering the physical features of the Mysore State, it may pay better if the pulp-factories and the paper-making factories are located at different places between which there are facilities of communication.

Scandinavia is said to export annually more than 200,000 tons of wood-pulp toBritian for the making of the finer sorts of writing and printing papers. The raw material used is chiefly white pine timber, which grows abundantly there. Abundance of raw material and the presence of numerous mountain-streams are obviously the main causes which have made the pulp-industry a great success there. Turning to our province, we find similar conditions existing in our malnad parts or the districts of Hassan, Kadur and Shimoga. There we have both abundance of raw materials and a perennial supply of water. The Bhadra River is a perennial rapid stream, and we believe it can be made to yeild power by means of turbines. There are magnificent

forests on its banks where the bamboo flourishes remarkably well. The bamboo grass is also found there in large quantities.

Mr. Harry Vincent, a paper-expert, loudly sings the praises of the bamboo in the Indian Forester, Vol. XXXVII. (1911-). According to him, the advantages of the bamboo as a pulp-maker, are:-

A. It has a good, strong vegetable fibre;

B. It is in general easily accessible for water-transport.

C. It is cheap and easily collected.

D. It is available in large quantities and abundant within a given area.

E. It is available for a regular and constant supply, and not subject to violent fluctuations either in quality or price.

F. It admits of simple and ready treatment, mechanical, chemical, or both, for easy and inexpensive conversion into bleached pulp.

G. The land established in bamboo, which will take three years from first planting to reach a height of thirty or forty feet, can then be reaped annually for an indefinite period.

H. The ordinary thick-walled bamboo produces, according to his statement, a paper which is " pliant, resistant and opaque, of enduring colour, thicker than other paper of the same weight"., forming one of the very finest of materials for writing and printing, and which also is of exceptional value for engraving. When rag-pulp is added in sufficient quantities to bamboo-pulp, superfine art-paper can be produced.

The objection that the Malnad is sparsely populated, and is incapable of supplying the required labour, may be brought forward to which we reply that the pulp-factories do not require very many

Canada, and that Scandinavia which is also a sparsely populated country, is making and exporting no less than 800,000 tons of wood-pulp.

The weather-conditions of the Malnad Districts are not, in our opinion favourable [illegible] for the establishment of factories for transforming the pulp into fine writing and printing papers. The banks of the Cauvery in the Mysore District are decidedly more favour - able for the location of paper-making factories. Large buildings and skilled labour on a large scale are requisite for the successful working of the paper-making factory; and we believe skilled labour on a large scale is found in the Mysore District. Electric power is also available there, which reduces considerably the cost of working. The pulp, manufactured in the malnad parts can be brought over easily to the Mysore District.

During the days of Mahomedan Rule in Mysore, paper, though of a rough sort, was made in many places, and most of the old Government records are found on home-made paper. In these days of the 20th. century, when the general intelligence of the people is much higher than it ever was before, and when a great deal of attention is zeal-ously paid by our benign Government to the development of the eco-nomic resources of the country, we think the establishment of pulp and paper-making factories should become accomplished facts at a very early date.

Being at Poona, curiosity drew me to the Deccan Paper-Mill at Kondwa, which is only a few miles from that city. A study of the several processes of paper-manufacture there increased my interest, and I made up my mind to exhibit at the Bangalore Municipal Exhibitio n the various materials that are used in paper-making together with drawings and models of some of the machines. I had at first some doubts

as to whether the public would visit my stall at all, but my four days' experience at the Exhibition has dispelled them all. All these four days my stall has literally been full of visitors , both Indian and European, eagerly listening to my explanations, and closely scanning the several models. Several ladies also visited the stall. It seems to me that [illegible] should be started under Government Guarantee [illegible] to get [illegible].

Bangalore
3rd April 1915

R Sitarama Rao B.Sc.

[illegible] M A T E R I A L S .

The raw materials used in a paper mill, are numerous; they may be classified as follows:-

I. Rags.

II. Products of the Vegetables Kingdom taking the place of rags, entirely or in part; the most important are :-

Esparto, Acacia [illegible], Jute, White Wood, Straws of Cereal and Leguminous plants, Ferns &c.

III. Materials required in Boiling :-

Unslaked Lime, Caustic Soda, Magnesium Sulphate, Calcium Sulphate

IV. Materials required in Bleaching :-

Hydrochloric (Muriatic Acid), Sulphuric acid,, Manganese, Chloride of Lime, Common Salt, Antichlorine.

V. Materials required in Sizing:-

Resin, Carbonate of Soda, Starch, Alum, Gelatine, Sulphate of Zinc, Silicate of Soda, Casein.

VI. Mineral Substances:-

Kaolin, Sulphate of Lime, Sulphate of Barium, China Clays, Agalite (Magnesium Silicate).

VII. Colouring Materials :-

Various Dye Stuffs.

To

S.Hiriyannaiya Esq M.A.;B.L.,

Private Secretary to the Dewan of Mysore

Sir,

16/4/15.

I am one of the two Candidates recommended - by the Selection Committee for a Foreign State Scholarship for PAPER MANUFACTURE.At the last Bangalore City Municipal Exhibition held in the Cubbon Park I demonstrated,as far as possible, the several processes of PAPER MANUFACTURE;and the Exhibition committee have been pleased to award to me aCertificate and a SILVER MEDAL.

I have written an article on"The Facilities For Paper Manufacture In Mysore"which has been given to the Editor of Mysore Economic Journal for favour of publication.

I herein enclose a true copy of the above mentioned Certificate as well as a copy of the Article;and I request you to be so good as to place the same before the Dewan of Mysore before the next Council Meeting takes place.

I am compelled to beg this favour of you as I am told that the Meeting of His Highness the Maharajha's Council takes place before the day on which the Dewan receives visitors.

I beg to remain,

Sir,

Your most obedient servant,

R. Sitarama Rao B.Sc.

C/o R.Raghunatha Rao Esq., B.A.,

Retired Head Master, Chitaldroog

High School, Chamarajendrapete,

Bangalore.

Bangalore,

10 th. April 1915.

D.v.I
Please have
this placed in
the file
abruee

23, Fifth Main Road,
Chamarajendrapete, Bangalore,
10 th. April 1915.

DIARY No. To 2503.

19-19
SECTION Edn
FILE No. 2-14
SERIAL No. 143

C.S.Balasundaram Iyer Esquire, B.A.,
Secretary to theGovt: of Mysore
in the Depts: of Education
and Agriculture.

Sir,

I am one of the candidates recommended by the Selection Committee for aFOREIGN STATE SCHOLARSHIP for PAPER---MANUFACTURE. At the last BANGALORE CITY MUNICPAL EXHIBITION---held in the CUBBON PARK,Isecured a stall and with the help of--some DRAWINGS,MODELS,etc I demonstrated as far as possible the--several processes in the MANUFACTURE OF PAPER.The EXHIBITION---COMMITTEE have been pleased to award to me a CERTIFICATE and---a SILVER MEDAL.

Ihave written an article on THE FACILITIES forPAPER MANUFACTURE IN MYSORE which has been given to the Editorof ---MYSORE ECONOMIC JOURNAL for favour of publication.

I herein enclose a true copy of the above mentioned---Certificate as well as a copy of the Article;and I request you-to be so good as to place the same before the DEWAN OF MYSORE--and HIS HIGHNESS'S COUNCIL before the next Council Meeting takes place.

I beg to remain,
Sir,
Your Most Obedient Servent,

R.S.Iyer

Gudh 8 143

2

BANGALORE CITY MUNICIPAL EXHIBITION, 1915.

Industrial and Demonstration Section.

President: Vice-President:

Raja Sabha Bhushana Dewan Bahadur K.P.Puttanna Chetty, Esq. B.Usman Khan Sahib, Esq.

Joint Secretaries.

B.Basavaradhya, Esq., B.A.,B.L. D.B.Ramachandra Mudaliar, Esq.

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Bangalore,

7th. April, 1915.

Sd./ K.P.Puttanna Chetty,

President.

The Facilities for Paper Manufacture in Mysore.

India is said to consume annually about 40,000 tons of pape and of this quantity less than one half is made by the Seven Indian Mills, the rest being imported chiefly from Europe. The Indian Mill it should be noted, use mostly the European Paper-Pulp instead of making their own. Now that the great European War has greatly disturbed and dislocated the trade, high time it is that we turn our thoughts to make our own Paper-Pulp and supply fully our own needs

India being continental in size, a large number of Paper Mills should be established and worked at convenient places to meet the growing demand for the article at the lowest possible price. It is our intention here to bring to light the great facilities that exist in the Mysore Province for the establishment of Paper Mills.

The manufacture of fine paper is a very complicated business, and the several processes vary much in detail according to the nature of the materials employed, and the class of paper intended to be produced. They are all, however, based upon the same principles, and they may be conveniently be divided into the follow -ing three main Groups:--

I. The complete separation of the fibrous parts of the select -ed Raw Materials from the Cellular portions;

II. The reduction of fibre to the condition of a fine Pulp;

III. The transformation of the Pulp into the required paper.

Any vegetable material that yields good fibre is capable

of being used for paper-making, but there is one important consider -ation which excludes altogether many substances from the list, For paper to be liberally used, it is absolutely necessary that its price should be as low as possible; and fibrous materials, such as cotton and other materials out of which more precious things can be made, are atonce put out as being far too costly for paper. Instead of cotton, tailor's cuttings, rags , weaving waste &c., which have little or no value, are used in the manufacture of paper. Similar considerations exclude ropes and timber. There are several Forest products, such as bamboo, Bhabar Grass, Stalk of the Cotton Plant &c., which can be used as raw materials. In the case of these materials the first processes is a Mechanical one, which consists in sorting the materials and in cutting it up into small bits for the subsequent operations. The separation of the fibrous parts from the Cellular Portions is a tedious process which may be done either mechanically or chemically. The mechanical processes can yield only inferior wrapping paper, and so the Cherical Processes is necessary in most cases for the production of fine writing and printing papers It consists--

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The pulp, after it is made fine and mixed with the required substances, is diluted with water;.and from the resulting milky liquid, paper is made with the help of a machine, which consists essentially of an endless wire-cloth mould on to which the prepared Pulp flows, and on which a continuous sheet of paper is formed. This continuous sheet then passes through a series of rollers to expel the water, and over a number of heated cylinders to be dried, and is wound up at the end of the machine as dried and smoothened paper.. This roll of paper is then taken into the finishing house which is fitted with Calandering Machines, which may be either be with Calenders for glazing continuous rolls or Plate Calenders for glazing single sheets , the latter being the type used for highly finished paper. The paper is then cut into sheets of different sizes, and sorted by hand, all damaged ones being removed. The papers are then properly packed, and are ready for market.

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For the successful working of a paper- mill, the selection of a suitable site is very necessary. The principal points to be attended to in this connection are;-

I. The abundance of the raw material and its easy transport

(Note that one ton of pulp requires more than two- and-a -half

tons of raw material).

II. The quality and quantity of the water-supply as well as the facility with which the waste water can be disposed of. (Note that the making of one ton of pulp requires about 50,000 gallons of water-).

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The objection that the Malnad is sparsely populated, and is incapable of supplying the required labour, may be brought forward to which we reply that the pulp-factories do not require very many